

Expeditionary Energy Concepts (E2C) 2016

Formerly known as Experimental Forward Operating Base (ExFOB)



USMC E2C – ACCELERATING ENERGY INNOVATION:

- Expeditionary Energy Concepts (E2C) – formerly known as Experimental Forward Operating Base or ExFOB – is the Marine Corps' innovative process to identify and evaluate energy efficient technologies that can increase the effectiveness and self-sufficiency of expeditionary forces.
- Once a year, the Marine Corps invites select industry to E2C to demonstrate commercial technologies with potential to address current Marine Corps energy, water, and waste capability gaps.
- The Marine Corps recently released a Request for Information (RFI) for E2C 2016 to identify energy and water technologies that enable small unit distributed operations.

E2C 2016:

- When:** 3-5 May 2016
- Where:** Marine Corps Base Camp Pendleton, CA
- Technology Focus Areas:**
 - Squad-sized Small Unit Water Purification
 - Energy storage technology for mobile electric micro-grid (MEM) application
 - Energy Scavenging to support Distributed Operations
 - Optimization of Shock Trauma Platoon/Forward Resuscitative Surgical System
- Learn more at: www.hqmc.marines.mil/e2o



The first E2C technology demonstration (then known as ExFOB) in 2010 at MCB Quantico, Va.



A Marine prepares to test a kinetic energy harvesting backpack during ExFOB 2014.



Marines learn about the Joint Infantry Company Prototype during the E2C 2016 technology demonstration.

ABOUT E2C:

- Created by the Commandant in 2009, E2C (formerly ExFOB) brings together stakeholders from across the Marine Corps requirements, acquisition, and technology development communities in a dynamic process to quickly evaluate and accelerate fielding of technologies that reduce battlefield energy and water requirements and extend the operational reach of the Marine Corps.
- E2C is not a tradeshow. During the week-long demonstration, a team of engineers will collect data on system performance and Marine operators will provide hands-on qualitative feedback. Following the demonstration, promising technologies may be evaluated in a controlled lab environment and then put into the hands of Marines for field testing in combat conditions. Lab and field evaluation results will inform Marine Corps requirements development and may lead to future fielding.
- Systems that make it through the phases of E2C – from demonstration to fielding – can enable a more self-sufficient, combat-effective future force.

FOR MORE INFORMATION:

- U.S. Marine Corps Expeditionary Energy Office
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USMC Expeditionary Energy Concepts (E2C)



E2C RESULTS “FROM CONCEPT-TO-COMBAT”:

▪ Since 2009, the E2C team has:

- Conducted 9 demonstrations at Marine Corps bases across the country
- Reviewed 300+ technologies through the E2C RFI process
- Assessed 100+ technologies at E2C demonstrations
- Evaluated 26 systems in lab / field following E2C
- Transitioned 5 systems to USMC Programs of Record



The Expeditionary Energy Concepts team

▪ Five energy systems first introduced by industry at past E2C technology demonstrations (formerly ExFOB) are currently Programs of Record:

- 1) **SOLAR PORTABLE ALTERNATIVE COMMUNICATIONS ENERGY SYSTEM (SPACES):**
SPACES is a lightweight, man-portable, renewable energy system designed to provide power for platoon and squad size units operating in remote locations. Marines use SPACES to recharge batteries that power communications equipment (e.g., SATCOM radios), reducing the number of batteries carried on extended patrol.
- 2) **GROUND RENEWABLE EXPEDITIONARY ENERGY NETWORK SYSTEM (GREENS):**
GREENS is a man-transportable power generation system that incorporates solar panels, energy storage, and AC/DC power sources. GREENS provides an average continuous output of 300 watts or 1,000 watts peak — enough to power a battalion combat operations center.
- 3) **RADIANT BARRIER:**
This shelter liner, designed for a Base-X 305 medium soft shelter, doubles the R-value (thermal resistance) of the tent. Marines use radiant barriers to keep cool air in and hot air out, reducing the number of environmental control units required in a combat environment.
- 4) **LIGHT EMITTING DIODE (LED) LIGHTS:**
LED light sets for medium soft shelters and general purpose use are more efficient than traditional fluorescent lights. Marines light their tents with these systems in order to reduce power requirements.
- 5) **MOBILE ELECTRIC HYBRID POWER SOURCES (MEHPS):**
MEHPS power generation—combining batteries, solar, and smart controls with traditional diesel generators—has demonstrated up to 50% fuel savings and up to 80% reduced generator run time. The Marine Corps is working closely with the Army to develop joint requirements and field hybrid power systems that will increase the combat effectiveness of both services.

